

Good example of distribution of apiaceae in lafayette and st. martin parishes the...

[Environment](#), [Plants](#)



A Thesis

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Introduction

This project will focus on the botanical Family Apiaceae in Lafayette and St. Martin parishes, Louisiana. These parishes are spatially adjacent but are distinguished by different ecological habitats, making them botanically diverse. Lafayette Parish contains a prairie complex, St. Martin Parish has large areas of swamps, rivers, and lakes. The only recent publications on the identification and distribution of the Apiaceae in Louisiana occur in) and the USDA Plants database (plants. usda. gov 2011, and Thomas and Allen 1996). Since little is known about this family in Louisiana, the major contributions of my study are to: (1) update current species distribution maps, and (2) advance knowledge of Louisiana Apiaceae.

Previous Studies

In 1941, Correl and Correl published a list of plant collections in Louisiana. However, it has been over 70 years since that study and it is likely that the distributions have changed considerably since then. The more recent “ Atlas of Vascular Flora of Louisiana” included 15Apiaceae species in Lafayette Parish and 15 species in St. Martin parish(Table2.) (Thomas and Allen 1996) However, the St. Martin collection included a miscataloged Eryngium heterophyllum that was later identified as E. hookerii. Allen and Thomas’

state checklist and maps of distribution were based primarily upon herbarium specimens from eight herbaria around the state of Louisiana - there was no attempt to verify the plant identifications.

Study Areas

Lafayette Parish

Lafayette Parish lies in southern Louisiana, about 130 miles west of New Orleans, and 30 miles north of the Gulf of Mexico. The parish comprises an area of 276 square miles, or 176, 640 acres (" State & County Quick Facts" 2011). The parish is bounded on the north by St. Landry and St. Martin Parishes, on the east by St. Martin and Iberia Parishes, on the south by Vermilion Parish, and on the west by Acadia and St. Landry Parishes. In some locations, the parish line is ambiguous.

Topography - In 1981 Perrin states one-eighth of the surface of Lafayette is swamp and timbered land with the remaining land being prairie. Most of the prairie land, or what is now considered upland, is now under cultivation or used for livestock. Lafayette Parish lies mostly in the Coastal Prairie region of the Gulf Coastal Plain Province. By far the greater portion of habitat consists of uplands, or terrace, with a primarily level surface. The uplands appear to be an ancient terrace of the Mississippi River: the remnant stream beds, or bottoms, comprise flood plains (Howe and Moresi 1936). The uplands range from about 25 to 30 feet above the remnant stream beds. The uplands have an average elevation of about 35 feet above sea level and slopes slightly to the south (Howe and Moresi 1933).

The topography is relieved by features such as numerous shallow ponds,

basins, faint ridges, and depressed areas along small drainage ways (U. S. Geological Survey 2011). The stream valleys are mostly shallow, and the slopes, produced by erosion, are gentle and in some locations scarcely perceptible, though the valleys of the larger streams are narrow and have rather steep slopes (U. S. Geological Survey 2011). The line of separation between the upland or terrace and the main bottom along the eastern side of the parish (at the outer edge of the Mississippi bottoms) is marked by a steep slope. The bluff enters the parish at a point about 3.5 miles northeast of Carencro and passes in a southerly direction through St. Landry Parish, then to the east (Howe and Moresi 1933). Along the bluff, numerous streams have cut into the higher uplands and produced narrow landforms of gently rolling topography..

South of Broussard has the most uneven surface in Lafayette parish. This section has numerous slight ridges, lower lying flats, and large depressions along streams, giving it a rather undulating topography, though in general it is termed flat land (Howe and Moresi 1933). The stream valleys are rather wide in proportion to the size of the drainage ways, and their bottoms are about 10 feet lower than the surrounding land (Howe and Moresi 1936). They have the appearance of abandoned stream channels. Somewhat similar channels are found in other parts of the parish.

Climate- The mean annual temperature in Lafayette is 67.6° F (Howe and Moresi 1933). December and January are the coldest months, each with a mean temperature of about 52.5°, and August is the warmest, with a mean of 81.5°. July's mean is only 0.3° lower. The range of monthly means is 29°. The lowest temperature recorded for LafayetteParishes is 6° and the highest

107° F, making an absolute range of 101° F (Howe and Moresi 1936). The temperature seldom rises as high as 95° F. Freezes occur when there are relatively high northerly winds, but cold spells seldom last longer than three days (Howe and Moresi 1933). The average date of the last killing frost in spring is March 3 and of the first of fall is November 13. The date of the latest killing frost recorded in the spring is March 30 and that of the earliest in the fall October 20 (Howe and Moresi 1933). The average growing season is 255 days, which is long enough to permit the growing of several crops in the same field in a single season.

The mean annual precipitation for Lafayette Parish is 54. 1 inches and 53. 95 for St. Martin Parish (Annual Estimates of the Louisiana Rainfall 2011). The precipitation is heaviest in June, July, and August and lightest in September, October, and November. During the summer season, Lafayette Parish averages 18. 97 inches of rainfall and decreases to 9. 95 inches from September to November (Annual Estimates of the Louisiana Rainfall 2011). The annual rainfall for both parishes has varied from 37. 25 inches in the driest year to 82. 02 inches in the wettest year (Annual Estimates of the Louisiana Rainfall 2011). The distribution of rainfall is plentiful, and long droughts rarely occur.

Soils -Lafayette Parish is crossed by the dividing line between what is considered old Mississippi alluvium or terrace and the Coastal Prairie division of the Gulf Coastal Plain (Howe and Moresi 1936). The dominant soils are derived from the old alluvium and occur on the terrace or the uplands of the parish to the east of the Coastal Plain soils (" U. S. Geological Survey" 2011). The material is believed to have been deposited by the Mississippi River or

other streams that drained into the Mississippi River (" U. S. Geological Survey" 2011). These terrace soils occur along the eastern part of the parish, and on the west they transition to into the Coastal Prairie soils without a sharp line of separation (" U. S. Geological Survey" 2011).

The coastal Prairie soils cannot be classed as stream deposited, but rather they are composed of marine sediments. They comprise a broad, level belt extending from the western part of Lafayette Parish westward along the Gulf coast of Louisiana and Texas. The first-bottom soils consist of comparatively recent alluvium, and over them, or at least over most of their area, sediments are being added from time to time by overflows (Howe and Moresi 1933). Narrow land formations along the Bayou Vermilion exhibit pronounced reddish-brown color characteristic of the Red River alluvium - alluvium carrying enough material washed from the Red Beds region at the upper source of the Red River to impart to it a peculiar reddish color (Howe and Moresi 1933). A considerable part of the bottoms on the east side of the parish apparently represent alluvium derived in part from Mississippi overflows. The material of the smaller streams is composed of wash derived wholly or largely from the local upland or terrace soils, such as the Olivier and Lintonia types (Howe and Moresi 1936).

The soil material of the parish is fine-textured and the dominant soils are silt loams. There is very little sandy land. A large percentage of the parish is considered uplands and is comprised of the Olivier, Lintonia, and Iberia soil series (" Review of the Tertiary Stratigraphy of Louisiana" 2011). The remaining upland series, the Crowley, Lake Charles, and Edna, represent the Coastal Plain soils. The Portland, Sharkey, and Collins series are found in the

low areas and swamps (Howe and Moresi 1936). Lime concretions are present in abundance in some of the types, particularly in the subsoil sections, and ferruginous concretions are plentiful, especially in the more poorly drained soils (" Review of the Tertiary Stratigraphy of Louisiana" 2011). The organic content appears to be at least moderately high in nearly all of the types of soils.

St. Martin Parish

Topography - About 70 per cent of the parish is occupied by remnants of the path of the Mississippi River , about 28 per cent by low terraces, and about 2 per cent by high terraces, (" State & County Quick Facts" 2011) Much of the east side of the parish is swamp. West of this extensive swamp land is the low terrace, occupied by the low phase of the Olivier silt loam and by soils of the Iberia series (Howe and Moresi 1933). Along the bayous there are some narrow land formations of Portland soils (Howe and Moresi 1936). The low terraces are 10 to 15 feet above the general level of the Atchafalaya swamps, and is subject to overflow when breaks occur in the Mississippi River levees (Howe and Moresi 1933).

Climate -The climate of St. Martin Parish is comparable to the adjacent Lafayette Parish. The mean annual temperature as recorded is 67. 7° F (Howe and Moresi 1933). For the winter months the mean temperature is 53. 3°, and for the summer months 80. 9°. The lowest temperature recorded is 6° F. and the highest 107° (Howe and Moresi 1936). The temperature seldom rises as high as 95°. Freezes occasionally occur during the winter, but cold spells seldom last longer than three days (Howe and Moresi 1933). The

average date of the last killing frost in the spring is March 4, and that of the first in the fall, November 12 (Howe and Moresi 1933). The date of the latest killing frost recorded in the spring is March 30, and that of the earliest in the fall, October 20 (Howe and Moresi 1933). The average growing season is 255 days, which is long enough to permit the growing of more than one crop on the same field (Howe and Moresi 1933).

The mean annual precipitation is 53.95 inches ("Annual Estimates of the Louisiana Rainfall" 2011). The rainfall is heaviest in the summer and lightest in the fall, averaging 19.24 inches in the former season and 9.78 inches for the latter ("Annual Estimates of the Louisiana Rainfall" 2011). The rainfall in the driest year recorded amounted to 37.25 inches, and in the wettest year to 82.02 inches ("Annual Estimates of the Louisiana Rainfall" 2011).

Soils - The soils of St. Martin Parish are all of alluvial origin. ("U. S. Geological Survey" 2003).

They are composed of sediments derived from the different soils occurring in the drainage basins of the Mississippi River and its tributaries (Howe and Moresi 1933). The peculiar chocolate-red color of the material (Portland material) seen along the banks of the streams is caused by sediments washed from the Red Beds region of western Texas and Oklahoma and deposited by the Red River, which at high-water stages enters the Atchafalaya (Howe and Moresi 1936). The high-terrace soils are believed to have been deposited over flood plains that existed during a former stage in the development of the Mississippi River alluvial plains. The better-drained soils of the parish - those standing above overflow and not having

impervious substrata - are better oxidized and browner, with less gray mottling in the subsoil (Howe and Moresi 1933) .

Lafayette Parish and St. Martin Parish

Methods

For this study, I surveyed the Apiaceae flora of Lafayette and St. Martin parishes. Field work was completed from fall 2010 through fall 2013. I selected my collection sites after reviewing information of the existing herbarium specimens which are located at the University of Louisiana at Lafayette and the University of Louisiana at Monroe. The collection information provided an overall idea of which habitats each plant were to likely be found. I also reviewed botanical literature, geological records, and topological and hydrological maps. In making my decision of which areas to study, I also considered accessibility and the degree of anthropogenic impacts. The parishes were divided into section to establish a system for visiting collection sites. Sections and their borders were determined by major roads, rivers, or the parish boundaries. I divided Lafayette Parish into seven sections with 17 permanent collection points (Figure 1.). I divided Upper St. Martin Parish into four sections with nine collection points (Figure 2.). Lower St. Martin Parish has very few roads and is mostly swamp, therefore, is divided into only one section (Figure 3). I also collected specimens during travels to and from established collection sites, especially where disturbed area flora would likely be found as these flora are prominent and relatively easy to collect. I attempted to visit each section during the spring and summer months once per month.

Major bodies of water and their tributaries were of special interest as these areas would be sources of plant introductions and dispersal and would provide habitats for many of the targeted species. If a species had been recorded in one of the parishes according to the USDA Plants Data Base or the “Atlas of Vascular Flora of Louisiana” and was not found at or near the permanent points, then I would visit the original collection site to determine if that plant still existed and was established. Information on habitat and location was catalogued for each species(Figures 4-6). The specimen were pressed and dried to preserve them. When this process was complete, the collection was placed in the herbarium. Duplicate collections were distributed to other universities as needed.

I created dichotomous keys to each genus and species by using unique characteristics. A list of the most basic characteristics that differentiate the plant specimens were used to make the dichotomous key to genus. The same format was used to make a key to the species. At each step of the process of using the key, choices between two contrasting statements eventually lead to the unknown genus or species. A general description of the genus and species is also included.

Habitat Descriptions

Cypress Swamps

Louisiana swamps are wetlands that are flooded annually by an overflow of near bodies of water. Swamps have areas of dry land that protrude from shallow bodies of water and are covered with aquatic plants. Fresh water, brackish and saltwater swamps exist depending on their proximity to the

coast. Swamps in Louisiana generally have mineral soils, poor drainage, and are dominated by *Taxodium distichum* and *Nyssa aquatica*. The swamps in Lafayette and St. Martin Parish is traversed by numerous lakes and a network of distributaries or bayous (Howe and Moresi 1936). Typical vegetation includes *Cicuta maculata* and *Lileopsis carolinensis*.

Marshes

Marshes are wetland that is usually flooded or subject to frequent flooding. The water is usually shallow and the vegetation types consist of grasses, rushes, and sedges. Many common Apiaceae such as *Hydrocotyle bonariensis* and *Hydrocotyle umbellata* grow in this habitat. Rarely are trees a component of a marsh. The soils in a marsh are rich in minerals. Marshes are usually found at the mouth of rivers near the coast. Marshes can be freshwater, brackish, or saltwater much like swamps. Marshes are very similar to swamps except the vegetation of swamps consists of trees

Bayou

A bayou refers to a slow moving stream and near the coast, the water level can fluctuate according to tides. The main bayous, the Vermilion and Bayou Queue de Tortue, drains about seven-eighths of the Lafayette Parish area (Howe and Moresi 1933). The vegetation differs according to the geographic region in which the bayou is in but typically holds many aquatic plants and plants such as *Ptilimnium capillaceum* can be found on the banks on these bayous.

Lakes

A lake is an inland body of water surrounded by land and is distinguished from a pond by the size, though there is no precise dimension that defines the body of water as lake or pond. Also ponds occur where what was once prairie is artificially lowered. (ClayComb 1945). There are a number of large lakes in the parish, the most important being Lake Tasse, Lake Rond, and Chicot Lake (Howe and Moresi 1936). Lakes can be freshwater, brackish or saltwater. Numerous small, shallow ponds and lakes occur throughout Lafayette Parish and St. Martin parish. Most of the streams are intermittently wet and dry. Many Apiaceae are supported of the fringe of the lakes such as *Cyclosporum leptophyllum*, *Hydrocotyle ranunculoides* and *Cicuta maculata*.

Wet Pasture

Wet pastures are artificially drained, open canopy areas that were previously wetlands. Many of the wet low areas in Lafayette and St. Martin Parish have been converted to pasture for livestock or development. These areas remain to have characteristics that can support a hydrophytic plant community typical of *Centella erecta*, *Hydrocotyle umbellata*, *Eryngium prostratum* and *Ptilimnium capillaceum*.

Prairie

The Lafayette and St. Martin Parish coastal Prairies contain sporadic pockets of grasslands that are usually absent of trees and shrubs. Prairie soils are not classed as stream deposited, but represent marine sediments (Howe and Moresi 1936) and support a different type of vegetation typical to Lafayette

and St. Martin Parish. The prairie habitat supports plants such as *Eryngium yuccifolium*.

Hardwood Forest

A hardwood forest is an ecosystem having deciduous hardwood trees as the dominant form of vegetation. Bottomland hardwood forests are forested, alluvial wetlands occupying broad floodplain areas that flank large river systems (Allen 1997). These forests are found throughout Louisiana in all parishes, but are the predominant natural community type of the Mississippi River Alluvial Plain (Allen 1997). Bottomland hardwood forests are characterized and maintained by a natural hydrologic regime of alternating wet and dry periods generally following seasonal flooding events (Allen 1997). These forests support distinct assemblages of plants which include *Sanicula canadensis*, *Limnoscium pumilum* and *Cryptotaenia canadensis*.

Disturbed Areas

A disturbed is an area in which the natural vegetative soil cover has been removed or altered, and which is therefore susceptible to erosion. This includes roadsides and almost all man made clearings of vegetation. Many of the Apiaceae grow in this habitat such as *Bowlesia incana*, *Chaerophyllum tainturieri*, *Cyclosporum leptophyllum*, *Torilis nodosa* and *Trepocarpus aethusae*.

DESCRIPTION OF GENUS

Bowlesia

Annual or perennial herb. Leaves simple, opposite or alternate, ovate-

acuminate, deeply palmately lobed, usually cordate at base. Umbel simple, axillary, pedunculated. Bracts thin and membranous, or absent. Flowers bisexual, whitish. Calyx entire or minutely lobed. Petals usually obtuse, glabrous or dorsally pubescent. Fruits dorsally compressed, stellate pubescence occasionally found, fruit sometimes winged, ribs obsolete. Stylopodium conical. Stems creeping, glabrous to stellate pubescent.

Centella

Perennial herb. Leaves simple, blades ovate to oblong, palmately veined, apex rounded, base cordate to truncate, pubescent beneath, margins denticulate, weakly sinuate or dentate; petioles pubescent to glabrous, significantly variable in length. Umbels simple, subcapitate, axillary; peduncles pubescent, usually shorter than petioles. Flowers 1-4 in each umbel, subsessile to pedicillate. Sepals absent. Petals white, yellow or green, often pubescent on lower surface, stylopodium depressed. Fruit strongly flattened laterally, subreniform, prominently ribbed and reticulated. Rhizomatous with slender horizontal stems. Leaves cluster from stem at each node.

Chaerophyllum

Annual to perennial herb. Leaves petiolate, 3-pinnately dissected, the ultimate division lobed; petioles sheathing, blade 2-pinnate to pinnately decomposed. Umbels compound, axillary and terminal. Compound umbel bearing 2-4 ultimate umbels. Involucres none; involucre of several ovate to oblong bractlets, erect at anthesis, spreading when fruits are mature. Flowers sessile, 3-10 per secondary umbel; very small. Sepals minute. Petals

white or pale yellow, ovate-orbicular with incurved apex. Styles shorter than stylopodium. Fruit linear-oblong, flattened laterally, commissural surface narrow, glabrous, ribs 5, obtuse, 5-6 mm long.

Cicuta

Perennial herb. Leaves petiolate, 1-3 pinnately compound, the upper ternately compound or simple. Leaf margins linear-lanceolate, serrate, or dentate. Principle lateral veins ascend toward sinuses between teeth.

Umbels compound, terminal or axillary, bracts absent or few. Bracteoles numerous, narrow, longer or shorter than flowers. Petals white or greenish white, obovate or suborbicular, apex narrow, inflexed. Fruit suborbicular or cordate, somewhat flattened laterally with flattened corky ribs. Stylopodium depressed. Stems tall, erect, and hollow. Roots fingerlike, tuberiform, and fleshy. Many species poisonous to humans.

Cryptotaenia

Perennial herb. Leaves petiolate, ternately divided, terminal base narrowly cuneate, lateral segments subsessile. Leaflets irregularly cleft, serrate or doubly serrate, upper leaves much reduced. Umbels compound, terminal and axillary, ultimate umbels with few flowers, stalks unequal. Flowers minute, sepals minute or absent, petals white, very small, tips inflexed. Fruit linear-oblong, glabrous, somewhat flattened laterally; ribs narrow, rounded, prominent, subequal.

Cyclospermum

Annual herb. Leaves petiolate, sheathes membranous, blade 3-4 pinnatisect, ultimate segment narrow-slender. Lower leaves short-petiolate, blades ternately or ternate-pinnately dissected. Umbels irregularly compound, rarely simple. Umbels occur in alternate opposition. Peduncles short or abortive, bracts absent. Petals white, greenish, ovate, acute, apex not narrow and inflexed, mid-rib conspicuous. Stylopodium low-conic, styles short to obsolete, fruit rounded at both ends to slightly narrowed at apex. Compressed laterally, glabrous; ribs rounded-obtuse, prominent, and somewhat corky.

Cynosciadium

Annual herb. Basal leaf blades linear to lanceolate, septate, acute apically, tapering to petiolelike base; stem leaves palmately parted. Inflorescence compound, axillary and terminal umbels. Involucre bracts unequal, umbels 2-10 per inflorescence, sepals minute, deltoid acuminate. Petals white, obovate, spreading. Fruit ovoid below, narrowed above, slightly flattened to subterete. Dorsal ribs narrow, lateral ribs prominent and winged. Stem relatively few branches, upper half frequently dichotomously branched.

Eryngium

Perennial or biennial herb. Leaves simple; petioles sheathing; blade entire, pinnately or palmately divided, leathery, venation parallel or reticulate, margins usually spinose. Umbels simple, densely capitate forming globose to cylindrical heads, solitary or in cymes, sometimes racemes. Bracts 1 to many, entire or divided, subtending the head. Sepals evident, rigid,

persistent. Petals white to blue or purple, ovate to oblong. Styles slender, stylopodium absent. Fruit globose or obovoid, flattened laterally, papillate surface, not ribbed, tuberculate.

Hydrocotyle

Perennial herb. Leaves petiolate; petioles not sheathing, solitary from nodes. Leaf margins irregularly crenate or crenate-lobed to peltate or cordate, or reniform. Inflorescence in a simple to compound umbel, sometimes proliferating. Umbels densely capitate, flowers small, calyx none or minute, petal ovate, fruit globose or ellipsoid, somewhat flattened laterally, broader than long, ribs present or absent, stylopodium conic to depressed. May grow in floating mats, rooting at nodes.

Lilaeopsis

Perennial herb. Leaves (phylloides) transversely septate, hollow, cylindrical, or flattened. Involucre 3 to several minute bracts. Umbels simple, axillary. Sepals minute or absent, petals white. Fruit ovate to suborbicular, slightly flattened or nearly terete, weakly pubescent or glabrous, lateral ribs thick, dorsal ribs narrow. Rhizomatous horizontal subterranean stem, found matted in water.

Limnoscium

Annual herb. Basal leaves linear-lanceolate, apically acute tapering to petiolelike base, septate, simple or pinnate with terminal segment elongated. Primary stem leaves pinnately divided with 2-9 linear lanceolate divisions, acute basally and apically. Inflorescence compound. Involucre

linear-filiform. Umbels 3-12 per inflorescence. Flowers 4-20 per umbel. Sepals ovate-deltoid. Petals white, broadly ovate, acuminate apically, tips curved inward. Fruit oval to suborbicular, rounded basally and apically, slightly compressed dorsally. Lateral ribs corky, sometimes winged, dorsal ribs low. Erect stem.

Ptilimnium

Annual herb. Leaves terete, hollow or petiolate and decomposed with filiform divisions. Petioles sheathing, with narrow hyaline borders. Inflorescence stalked; umbels compound, axillary and terminal. Bracts of involucrel entire.

Flowers white. Sepals minute, lanceolate. Fruit ovoid to suborbicular, compressed laterally, dorsal ribs rounded or acute, lateral ribs separated from dorsal ribs by corky tissues on commissural side of ribs. Erect and relatively few branched stems. Fibrous, sometimes tuberous roots. Sanicula

Biennial or perennial herb. Leaves petiolate or sub-sessile; sheathes generally membranous. Leaf blade round-cordate to cordate-pentagonal, 3-5 palmately cleft and often lobed, margins serrate or doubly seto-serrate.

Umbels simple or compound; peduncles racemous, cymous or corymbose.

Flowers bisexual and pedicellate, staminate flowers. Petals white to greenish white, stylopodium absent or flat, styles may be shorter or exceed the calyx teeth, recurved. Fruit ellipsoid or sub-globose, densely covered with uncinated or straight bristles. Ribs inconspicuous or slightly prominent.

Torilis

Annual, sometimes perennial herb. Leaves petiolate, 1-2 pinnate or pinnately decomposed, oblong to elliptic, densely toothed to deeply lobed. Umbels

loosely compound or capitate, terminal and/or lateral. Bracts few or inconspicuous, umbellules sessile, bracteoles few to many, linear. Calyx teeth small, acute to triangular. Petals white to purplish red, narrow inflexed apex. Stylopodium short and thick. Fruit round or oblong, flattened laterally, primary ribs filiform, secondary ribs hidden by dense spines. Seed flattened dorsally in cross section

Trepocarpus

Annual herb. Leaves pinnately decompose-dissected, ultimate division flat, narrowly linear. Inflorescence of compound umbels, axillary and terminal. Compound umbels bear 2-4 ultimate umbels. Flowers 4-10 per umbellet, sepals somewhat unequal, petals white, ovate, apices inflexed. Anthers yellow. Styles short, stylopodium short, conic. Fruit glabrous, slightly flattened laterally, strongly ribbed. Slender taproot.

DESCRIPTION OF SPECIES

Bowlesia incana

Bowlesia incana Ruiz & Pav.,. Low, prostrate to suberect annual; leaves opposite; leaf blades suborbicular in outline, 5-7-lobed, to 3 cm long and 4.5 cm wide, usually much smaller; petioles to 7 cm long; flowers minute, white or purplish; fruits sessile to subsessile, ovate to round, 1-2 mm long.

Cryptotainea canadensis

C. canadensis (L.)DC., Slender, branching glabrous perennial, 3-10 dm tall from a cluster of fibrous roots. Leaves ternately divided, the 3 leaflet-like segments ovate, 8-15 cm long. 3. 5-7 cm wide, the base of the terminal

segment narrowly cuneate, the lateral segments subsessile, the margins serrate or doubly serrate. Umbels compound, open, terminal and axillary; peduncles usually 2-6 cm long; involucre absent or inconspicuous; rays 2-5, unequal, strongly ascending; involucre bractlets minute; pedicels unequal, umbellets appearing elongate; petals white. Fruit linear-oblong, 4-7 mm long, glabrous; mericarps suborbicular in cross section.

Centella erecta

Centella erecta (L. f.) Fernald, Acaulescent perennial with creeping rhizomes; leaves simple; leaf blades ovate to broadly ovate, basally cordate, petiolate; umbels simple; flowers white or nearly white; fruits with 3 primary and 2 secondary ribs, reticulate.

Cicuta maculata

Cicuta maculata L., Glabrous, usually tall perennial to 2 m tall; roots fleshy and fascicled; leaves 2-3 times pinnately compound; flowers white; fruits oval to orbicular, 2-4 mm long, with ribs prominent. Fruit plane or weakly ridged at juncture of the mericarps.

Chaerophyllum tainturieri

C. tainturieri Hooker. Plant erect, 2-9 dm tall, branching above, rarely with one branch from near the base, stems hispid, trichomes usually spreading. Involucre bractlets strongly reflexed in fruit. Fruit glabrous

Cyclospermum leptophyllum

Cyclospermum leptophyllum (Pers.) Sprague ex Britton & P. Wilson. Low glabrous annual 5-60 cm tall; leaves highly variable, the lowest with wide

segments, the uppermost with almost thread-like segments; umbels axillary and terminal, sessile or short-peduncled, typically with 3-5 rays; flowers minute, white; fruits ovoid. 1

Cynosciadium digitatum

Cynosciadium digitatum DC., Glabrous annual; stems to 65 cm tall; basal leaves linear-lanceolate, entire; stem leaves palmately compound or parted, with 3-5 long narrow segments; flowers rather few, not conspicuous, white; fruits ovoid, 2-3 mm long.

Eryngium prostratum

E. prostratum Nuttall. Low, slender, prostrate or weakly erect perennial; stems often numerous, branching, 1-7 dm long, 0.5-1 mm in diam. Basal leaves thin, ovate to lanceolate, 2-4 cm long, entire or irregularly dentate, occasionally palmately lobed or incised, petiolate, upper leaves reduced. Heads pale to dark blue, cylindrical, 5-7 mm long, rarely longer, 2-4 mm broad, solitary from the axis; bracts linear, usually 1X or more as long as the heads, often strongly reflexed at maturity.

Eryngium hookerii

Eryngium hookeri Walp., Erect annual 30-60 cm tall; lower stem leaves nearly sessile, lanceolate, laciniately toothed, spinulose; upper stem leaves ovate, palmately divided into 5-7 oblong, lacinate or pinnatifid lobes; heads purplish; coma of a few bracts at apex of heads or coma absent; fruits 1-2 mm long.

Eryngium yuccifolium

E. yuccifolium Michaux. Coarse perennial, solitary or in clumps; stem solitary, erect, branched above, 2. 5-12 (18) dm tall. Leaves coriaceous, linear, parallel-veined, 1. 5-8 dm long, 1-3 cm wide, margins weakly spinose. Inflorescence cymosely branched, heads subglobose or ovoid, 8-25 mm long, 7-20 mm broad; bractlets ovate or broadly lanceolate, prominent. Petals white or greenish.

Hydrocotyle umbellata

H. umbellata L. Leaves peltate, orbicular, 1-4 cm wide, crenate; petioles 4-15 cm long. Umbels simple, of 15-50 pedicellate flowers, 1-2 cm broad, peduncle equaling or, more often, exceeding the length of the petioles.

Hydrocotyle bonariensis

H. bonariensis Lam. Leaves peltate, orbicular to suborbicular, 3-10 cm wide crenate; petioles 7-20 cm long. Umbels proliferous, the branches 3-10 cm long, flowers verticillate on the branches, peduncle equaling or exceeding the petioles.

Hydrocotyle verticillata

H. verticillata Thunberg. Leaves peltate, orbicular to suborbicular, 1. 5-5 cm wide, crenate; petioles 5-15 cm long. Inflorescence an interrupted spike or raceme with 3-7 whorls of 2-7 flowers each, the axis occasionally bifurcate, penduncles shorter to longer than the petioles.

Hydrocotyle ranunculoides

H. ranunculoides L. f. Fleshy aquatic or semiaquatic; leaves dark green, reniform, cordate, 1-5 cm wide, often 3-5 lobed, the central lobe distinct; petioles 5-25 cm long. Umbels simple, 4-10 flowered, 6 mm or less broad, peduncles usually $\frac{1}{2}$ the length of the petioles, or shorter.

Lileopsis carolinensis

L. carolinensis C. & R. Leaves elongate, spatulate distally, 7-35 cm long, appears septate Peduncles 2-5 cm long.

Limnoscium pumilum

Limnoscium pumilum (DC.) Mathias & Constance, low and diffuse; plant 5-40 cm high or long, oval to orbicular fruits 2-3 mm long and 2 mm wide, and its calyx teeth in fruit equal in length to the stylopodium (to 1.5 mm long).

Ptilimnium capillaceum

Ptilimnium capillaceum (Michx.) Raf. Flowers relatively few and small, not very showy; fruits broadly ovoid, 1.5-3 mm long. Leaves pinnately compound; ultimate divisions filiform; petals white.

Sanicula odorata

Sanicula odorata (Raf.) Pryer & Phillippe,. Ultimate umbels with up to 15 or more staminate flowers; fruit bristles not bulbous at base. Leaves petiolate below to subsessile, palmately compound with 1-3 leaflets.

Sanicula canadensis

S. canadensis L. Leaves thin, light green, segments of basal and lower cauline leaves usually 5, oblanceolate, 2-6 cm long, 1.5-3.5 cm wide, finely to coarsely, usually evenly, serrate. Peduncles 1-12 cm long. Each umbel of 3 pedicellate perfect flowers and 2-4 short-pedicellate staminate flowers, or staminate flowers absent; petals white or greenish; styles no longer than the bristles of the ovary or fruit. Fruit subglobose, 2-5 mm long or broad, bristles with swollen bases, in indistinct rows.

Torilis nodosa

T. nodosa (L.) Gaertner. Plant decumbent, branching chiefly from the base, 1-4 dm tall. Leaves finely pinnately or bipinnately dissected into linear-lanceolate segments 1-4 mm long, less than 1 mm wide. Umbels compound, appearing capitate, opposite the leaves; peduncle, rays and pedicels strongly reduced or absent; involucre absent or inconspicuous; involucre or several linear-lanceolate bractlets 1-2 mm long.

Trepocarpus aethusae

T. aethusae Nuttall. Erect glabrous annual, branching above. Leaves pinnately decomposed, 6-10 cm long, the ultimate segments linear, 3-15 mm long, 1 mm or less wide. Umbels compound, axillary and terminal; peduncles 2-6 cm or more long; involucral bract usually one. Fruit oblong, 8-10 mm long, smooth, strongly ribbed; mericarps slightly flattened dorsally, subreniform in cross section.

Thaspium trifoliatum

T. trifoliatum (L.) Gray. Plant glabrous or essentially so. Basal leaves usually entire, cordate to reniform, 2-7 cm long or wide, uniformly serrate, or serrulate, upper leaves appearing trifoliolate, rarely pinnatisect, the segments ovate or ovate-lanceolate, the larger to 7 cm long, 1-3.5 cm wide, serrate; all leaves with a distinct hyaline margin. Umbels usually 1-2 per stem; peduncles 4-8 cm long; involucre absent; Fruit glabrous.

Identification Keys to Genus

* the underlined names indicate that they are not reported in parishes of study but are reported for Louisiana

A. Leaves

simple-----

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